Correlation of Ontario Mathematics 2005 Curriculum to *Addison Wesley Math Makes Sense* 6

Number Sense and Numeration

Overall Expectations

By the end of Grade 6, students will:

- read, represent, compare, and order whole numbers to 1 000 000, decimal numbers to thousandths, proper and improper fractions, and mixed numbers;
- solve problems involving the multiplication and division of whole numbers, and the addition and subtraction of decimal numbers to thousandths, using a variety of strategies;
- demonstrate an understanding of relationships involving percent, ratio, and unit rate.

Students will:

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
Quantity Relationships represent, compare, and order whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools (e.g., number lines with appropriate increments, base ten materials for decimals);	2.1, 2.2, 2.3, 4.1, 4.2, 4.3
demonstrate an understanding of place value in whole numbers and decimal numbers from 0.001 to 1 000 000, using a variety of tools and strategies(e.g., use base ten materials to represent the relationship between 1, 0.1, 0.01, and 0.001);	2.2, 4.1, 4.2
read and print in words whole numbers to one hundred thousand, using meaningful contexts (e.g., the Internet, reference books);	2.2
represent, compare, and order fractional amounts with unlike denominators, including proper and improper fractions and mixed numbers, using a variety of tools and strategies (e.g., fraction circles, Cuisenaire rods, drawings, number lines, calculators) and using standard fractional notation;	8.1, 8.2, 8.3

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
estimate quantities using benchmarks of 10%, 25%, 50%, 75%, and 100% (e.g., the container is about 75% full; approximately 50% of our students walk to school);	8.8, 8.9
solve problems that arise from real-life situations and that relate to the magnitude of whole numbers up to 1 000 000;	2.1
identify composite numbers and prime numbers, and explain the relationship between them (i.e., any composite number can be factored into prime factors) (e.g., 42 = 2 x 3 x 7);	2.5
Operational Sense use a variety of mental strategies to solve addition, subtraction, multiplication, and division problems involving whole numbers (e.g., use the commutative property: 4 x 16 x 5 = 4 x 5 x 16, which gives 20 x 16 = 320; use the distributive property: (500 + 15) ÷ 5 = 500 ÷ 5 + 15 ÷ 5, which gives 100 + 3 = 103);	2.7
solve problems involving the multiplication and division of whole numbers (four-digit by two-digit) using a variety of tools (e.g., concrete materials, drawings, calculators) and strategies (e.g., estimation, algorithms);	2.10, 2.11, 2.12
add and subtract decimal numbers to thousandths using concrete materials, estimation, algorithms, and calculators;	4.5, 4.6
multiply and divide decimal numbers to tenths by whole numbers, using concrete materials, estimation, algorithms, and calculators (e.g., calculate 4 x 1.4 using base ten materials; calculate 5.6 ÷ 4 using base ten materials);	4.10, 4.11, 4.12
multiply whole numbers by 0.1, 0.01, and 0.001 using mental strategies (e.g., use a calculator to look for patterns and generalize to develop a rule);	4.9
multiply and divide decimal numbers by 10, 100, 1000, and 10 000 using mental strategies (e.g., "To convert 0.6 m^2 to square centimetres, I calculated in my head 0.6 x 10 000 and got 6000 cm^2.");	4.7, 4.8

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
use estimation when solving problems involving the addition and subtraction of whole numbers and decimals, to help judge the reasonableness of a solution;	2.9, 4.5
explain the need for a standard order for performing operations, by investigating the impact that changing the order has when performing a series of operations;	2.8
Proportional Relationships represent ratios found in real-life contexts, using concrete materials, drawings, and standard fractional notation;	8.9, 8.10
determine and explain, through investigation using concrete materials, drawings, and calculators, the relationships among fractions (i.e., with denominators of 2, 4, 5, 10, 20, 25, 50, and 100), decimal numbers, and percents (e.g., use a 10 x 10 grid to show that $\frac{1}{4}$ = 0.25 or 25%);	8.7
represent relationships using unit rates.	4.8, 4.10, 4.11, 8.11, 10.4

Measurement

Overall Expectations

By the end of Grade 6, students will:

- estimate, measure, and record quantities, using the metric measurement system;
- determine the relationships among units and measurable attributes, including the area of a parallelogram, the area of a triangle, and the volume of a triangular prism.

Students will:

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
Attributes, Units, and Measurement Sense demonstrate an understanding of the relationship between estimated and precise measurements, and determine and justify when each kind is appropriate;	4.4
estimate, measure, and record length, area, mass, capacity, and volume using the metric measurement system;	4.5, 6.7, 6.8 with supporting TG note
Measurement Relationships select and justify the appropriate metric unit (i.e., millimetre, centimetre, decimetre, metre, decametre, kilometre) to measure length or distance in a given real-life situation;	9.1 with supporting TG note
solve problems requiring conversion from larger to smaller metric units (e.g., metres to centimetres, kilograms to grams, litres to millilitres;	4.7, 4.9, 4.12, 6.7, 6.8
construct a rectangle, a square, a triangle, and a parallelogram, using a variety of tools (e.g., concrete materials, geoboard, dynamic geometry software, grid paper), given the area and/or perimeter;	9.9
determine, through investigation using a variety of tools (e.g., pattern blocks, Power Polygons, dynamic geometry software, grid paper) and strategies (e.g., paper folding, cutting, and rearranging), the relationship between the area of a rectangle and the areas of parallelograms and triangles, by decomposing (e.g., cutting up a parallelogram into a rectangle and two congruent triangles) and composing (e.g., combining two congruent triangles to form a parallelogram);	9.4, 9.5

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
develop the formulas for the area of a parallelogram (i.e., *Area of parallelogram* = *base* × *height*) and the area of a triangle [i.e., *Area of triangle* = (*base* × *height* ÷ 2], using the area relationships among rectangles, parallelograms, and triangles;	9.6
solve problems involving the estimation and calculation of the areas of triangles and the areas of parallelograms;	9.4, 9.5, 9.6, 9.9
determine, using concrete materials, the relationship between units used to measure area (i.e., square centimetre, square metre), and apply the relationship to solve problems that involve conversions from square metres to square centimetres;	9.2
determine, through investigation using a variety of tools and strategies (e.g., decomposing rectangular prisms into triangular prisms; stacking congruent triangular layers of concrete materials to form a triangular prism), the relationship between the height, the area of the base, and the volume of a triangular prism, and generalize to develop the formula (i.e., *Volume* = *area of base* × *height*);	9.7
determine, through investigation using a variety of tools (e.g., nets, concrete materials, dynamic geometry software, Polydrons) and stratgegies, the surface area of rectangular and triangular prisms;	6.5, 9.8
solve problems involving the estimation and calculation of the surface area and volume of triangular and rectangular prisms.	6.5, 6.6, 9.7, 9.8

Geometry and Spatial Sense

Overall Expectations

By the end of Grade 6, students will:

- classify and construct polygons and angles;
- sketch three-dimensional figures, and construct three-dimensional figures from drawings;
- describe location in the first quadrant of a coordinate system, and rotate two-dimensional shapes.

Students will:

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
Geometric Properties sort and classify quadrilaterals by geometric properties related to symmetry, angles, and sides, through investigation using a variety of tools (e.g., geoboard, dynamic geometry software) and strategies (e.g., using charts, using Venn diagrams);	3.2 with supporting TG note
sort polygons according to the number of lines of symmetry and order of rotational symmetry, through investigation using a variety of tools (e.g., tracing paper, dynamic geometry software, Mira);	7.6
measure and construct angles up to180º using a protractor, and classify them as acute, right, obtuse, or straight angles;	3.1
construct polygons using a variety of tools, given angle and side measurements;	3.4, Unit 3 Technology Feature, page 96
Geometric Relationships build three-dimensional models using connecting cubes, given isometric sketches or different views (i.e., top, side, front) of the structure;	3.6
sketch, using a variety of tools (e.g., isometric dot paper, dynamic geometry software), isometric perspectives and different views (i.e., top, side, front) of three-dimensional figures built with interlocking cubes;	3.6
Location and Movement explain how a coordinate system represents location, and plot points in the first quadrant of a Cartesian coordinate plane;	5.5, 7.1

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
identify, perform, and describe, through investigation using a variety of tools (e.g., grid paper, tissue paper, protractor, computer technology), rotations of 180º and clockwise and counterclockwise rotations of 90º, with the centre of rotation inside or outside the shape;	7.1, 7.2
create and analyse designs made by reflecting, translating and/or rotating a shape, or shapes, by 90º or 180º.	7.2

Patterning and Algebra

Overall Expectations

By the end of Grade 6, students will:

- describe and represent relationships in growing and shrinking patterns (where the terms are whole numbers), and investigate repeating patterns involving rotations;
- use variables in simple algebraic expressions and equations to describe relationships.

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
Patterns and Relationships identify geometric patterns, through investigation using concrete materials or drawings, and represent them numerically;	10.1, 10.3
make a table of values, for growing patterns given pattern rules, in words (e.g., start with 3, then double each term and add 1 to get the next term), then list the ordered pairs (with the first coordinate representing the term number and the second coordinate representing the term) and plot the points in the first quadrant, using a variety of tools (e.g., graph paper, calculators, dynamic statistical software);	1.1, 10.1, 10.2, 10.3
determine the term number of a given term in a growing pattern that is represented by a pattern rule in words, a table of values, or a graph;	10.1
describe pattern rules (in words) that generate patterns by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term (e.g., for 1, 3, 5, 7, 9, …, the pattern rule is "start with 1 and add 2 to each term to get the next term"), then distinguish such pattern rules from pattern rules, given in words, that describe the general term by referring to the term number (e.g., for 2, 4, 6, 8; …, the pattern rule for the general term is "double the term number");	1.1, 1.2, 10.1, 10.3
determine a term, given its term number, by extending growing and shrinking patterns that are generated by adding or subtracting a constant, or multiplying or dividing by a constant, to get the next term;	1.1, 1.2, 10.1, 10.2, 10.3
extend and create repeating patterns that result from rotations, through investigation using a variety of tools (e.g., pattern blocks, dynamic geometry software, geoboards, dot paper);	7.8 with supporting TG note

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
Variables, Expressions, and Equations demonstrate an understanding of different ways in which variables are used (e.g. variable as an unknown quantity; variable as a changing quantity);	1.4
identify, through investigation, the quantities in an equation that vary and those that remain constant (e.g., in the formula for the area of a triangle, $A = \frac{b \times h}{2}$ the number 2 is a constant, whereas *b* and *h* can vary and may change the value of A);	9.1, 9.4, 9.6 with supporting TG note
solve problems that use two or three symbols or letters as variables to represent different unknown quantities;	1.4
determine the solution to a simple equation with one variable, through investigation using a variety of tools and strategies (e.g., modelling with concrete materials, using guess and check with and without the aid of a calculator).	1.4

Data Management and Probability

Overall Expectations

By the end of Grade 6, students will:

- collect and organize discrete or continuous primary data and secondary data and display the data using charts and graphs, including continuous line graphs;
- read, describe, and interpret data, and explain relationships between sets of data;
- determine theoretical probabilities of an outcome in a probability experiment, and use it to predict the frequency of the outcome.

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
Collection and Organization of Data collect data by conducting a survey (e.g., use an Internet survey tool) or an experiment to do with themselves, their environment, issues in their school or community, or content from another subject, and record observations or measurements;	5.4, 5.6, 5.7
collect and organize discrete or continuous primary data and secondary data (e.g., electronic data from websites such as E-Stat or Census At Schools) and display the data in charts, tables, and graphs (including continuous line graphs) that have appropriate titles, labels (e.g., appropriate units marked on the axes), and scales (e.g., with appropriate increments) that suit the range and distribution of the data, using a variety of tools (e.g., graph paper, spreadsheets, dynamic statistical software);	5.4, 5.6, 5.7, Unit 5 Technology Feature page 182, 6.8, 10.4, Unit 10 Technology Feature, page 397
select an appropriate type of graph to represent a set of data, graph the data using technology, and justify the choice of graph (i.e., from types of graphs already studied, such as pictographs, horizontal or vertical bar graphs, stem-and-leaf plots, double bar graphs, broken-line graphs, and continuous line graphs);	5.4, Unit 5 Technology Feature, page 182
determine, through investigation, how well a set of data represents a population, on the basis of the method that was used to collect the data;	5.7

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
Data Relationships read, interpret, and draw conclusions from primary data (e.g., survey results, measurements, observations) and from secondary data (e.g., sports data in the newspaper, data from the Internet about movies), presented in charts, tables, and, graphs (including continuous line graphs);	5.1, 5.2, 5.4, 5.6, 5.7
compare, through investigation, different graphical representations of the same data;	5.4, Unit 5 Technology Feature, page 182
explain how different scales used on graphs can influence conclusions drawn from the data;	5.4, Unit 5 Technology Feature, page 182
demonstrate an understanding of mean (e.g., *mean* differs from *median* and *mode* because it is a value that "balances" a set of data – like the centre point or fulcrum in a lever), and use the mean to compare two sets of related data, with and without the use of technology;	5.2
demonstrate, through investigation, an understanding of how data from charts, tables, and graphs can be used to make inferences and convincing arguments (e.g., describe examples found in newspapers and magazines);	5.1
Probability express theoretical probability as a ratio of the number of favourable outcomes to the total number of possible outcomes, where all outcomes are equally likely (e.g., the theoretical probability of rolling an odd number on a six-sided number cube is $\frac{3}{6}$ because, of six equally likely outcomes, only three are favourable – that is, the odd numbers 1, 3, 5);	11.1, 11.2
represent the probability of an event (i.e., the likelihood that the event will occur), using a value from the range of 0 (never happens or impossible) to 1 (always happens or certain);	11.1

Specific Expectations	***Addison Wesley Mathematics Makes Sense Grade 6*, lessons:**
predict the frequency of an outcome of a simple probability experiment or game, by calculating and using the theoretical probability of that outcome (e.g., "The theoretical probability of spinning red is $\frac{1}{4}$ since there are four different-coloured areas that are equal. If I spin my spinner 100 times, I predict that red should come up about 25 times).	11.5